

Appl. No. 10/648,900
Amendment dated March 18, 2004
Reply to Office Action of March 4, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) In a skewed roller brake assembly having a main axis of rotation, having a first plate adapted to be rotated about said main axis, having a second plate adapted to be rotated relative to said first plate about said main axis, and having an intermediate plate adapted to be rotated about said main axis and positioned between said first and second plates, said first and second plates being adapted to be axially loaded with respect to one another, said intermediate plate having a slot bounded by a first wall that is arranged at a first skew angle with respect to a radius from said main axis, and having a cylindrical roller arranged in said slot for rolling engagement with said first and second plates about the axis of said roller such that said roller axis will be urged toward a position parallel to said first wall when said first and second plates are rotated relative to one another in one angular direction, the improvement which comprises:

said slot having a second wall opposed but not parallel to said first wall and arranged at a second skew angle with respect to a radius from said main axis such that said roller axis will be urged toward a position parallel to said second wall when said first and second plates are rotated relative to one another in the opposite angular direction;

whereby the frictional resistance to relative rotation between said first and second plates determined by the skew angle of said roller axis the resistance to relative rotation between said first and second plates for the same value of axial loading may differ as a function of will change between a first value and a second value as the direction of relative angular rotation between said first and second plates is reversed.

2. (Currently Amended) The improvement as set forth in claim 1 wherein said second wall is substantially parallel to a radius from said main axis such that the frictional resistance to relative rotation between said first and second plates in said opposite angular direction will be minimized.

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3. (Currently Amended) The improvement as set forth in claim 1 wherein said roller is ~~mounted~~ constrained in said slot for rolling movement between said first and second walls.

4. (Original) The improvement as set forth in claim 1 wherein said intermediate plate has a plurality of said slots, and wherein said assembly includes a corresponding plurality of said rollers, with one of said rollers being operatively arranged in a respective one of said slots.

5. (Currently Amended) The improvement as set forth in claim 1 wherein said roller is axially restrained ~~from moving axially at a substantially constant radius from said main axis~~ when said roller axis is parallel to said first wall.

6. (Currently Amended) The improvement as set forth in claim 5 ~~+~~ wherein said roller is axially restrained ~~from moving axially at said constant radius~~ when said roller axis is parallel to said second wall.

7. (Cancelled)

8. (New) A skewed roller brake assembly having a main axis of rotation, comprising:

a first plate adapted to be rotated about said main axis;

a second plate adapted to be rotated relative to said first plate about said main axis, said first and second plates being adapted to be axially loaded with respect to one another;

an intermediate plate positioned between said first and second plates and adapted to be rotated about said main axis, said intermediate plate having a slot bounded by a first wall and an opposed but non-parallel second wall; and

a cylindrical roller loosely contained in said slot for rolling engagement with said first and second plates about the axis of said roller, said roller being adapted to move to a position such that said roller axis will be substantially parallel to said slot first wall when said first and second plates are rotated in one relative angular direction and adapted to move to a position such that said roller

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axis will be substantially parallel to said slot second wall when said first and second plates are rotated in the opposite relative angular direction;

whereby the frictional resistance to relative rotation between said first and second plates determined by the skew angle of said roller axis with respect to a radius from said main axis for the same value of axial loading will change between a first value and a second value as the direction of relative angular rotation between said first and second plates is reversed.

9. (New) A skewed roller brake assembly having a main axis of rotation, comprising:

a first plate adapted to be rotated about said main axis;

a second plate adapted to be rotated relative to said first plate about said main axis, said first and second plates being adapted to be axially loaded with respect to one another; and

a cylindrical roller positioned between said first and second plates for rolling engagement therewith about the axis of said roller, said roller being constrained to move between a first position at which said roller axis will be at a first skew angle with respect to a radius from said main axis when said plates are relatively rotated in one angular direction and a second position at which said roller axis will be at a second skew angle with respect to said radius when said plates are relatively rotated in the opposite angular direction, said first and second skew angles being substantially different;

whereby the frictional resistance to relative rotation of said first and second plates determined by the skew angle of said roller axis for the same value of axial loading will change between a first value and a second value as the direction of relative angular rotation between said first and second plates is reversed.